Model for *Pinus sylvestris* stands Iberian and Central Systems (Spain)

Model

Psylvestris_stand__SILVES__si-sc__v01.py

Model description

- Specie: *Pinus sylvestris* L.
- Spanish Forest Inventory (SFI) code: 21
- Geographical area: Iberian and Central Systems
- Geographical area (administrative): Madrid, Segovia, Soria and Burgos

Model type

- Category: stand growth
- Model level: stand
- Reproduction methods: seedling forest
- Stand structure: even-aged stands
- Species composition: monospecific stands
- Forest origin: natural

Model requirements and recommended use

- Initial inventory requirements: age, mean height, basal area and density of the plot
- Geographical area: Madrid, Segovia, Soria and Burgos, closer places and another places with similar characteristics (assuming differences)
- Stand type: monospecific stands

Figure 1: *Pinus sylvestris* stand, by ClémentGodbarge commonswiki assumed (based on copyright claims). Own work assumed (based on copyright claims)., CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=323975

Figure 2: Details of *Pinus sylvestris*, public domain, https://commons.wikimedia.org/w/index.php?curid=529150

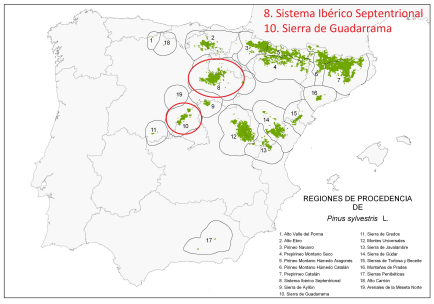


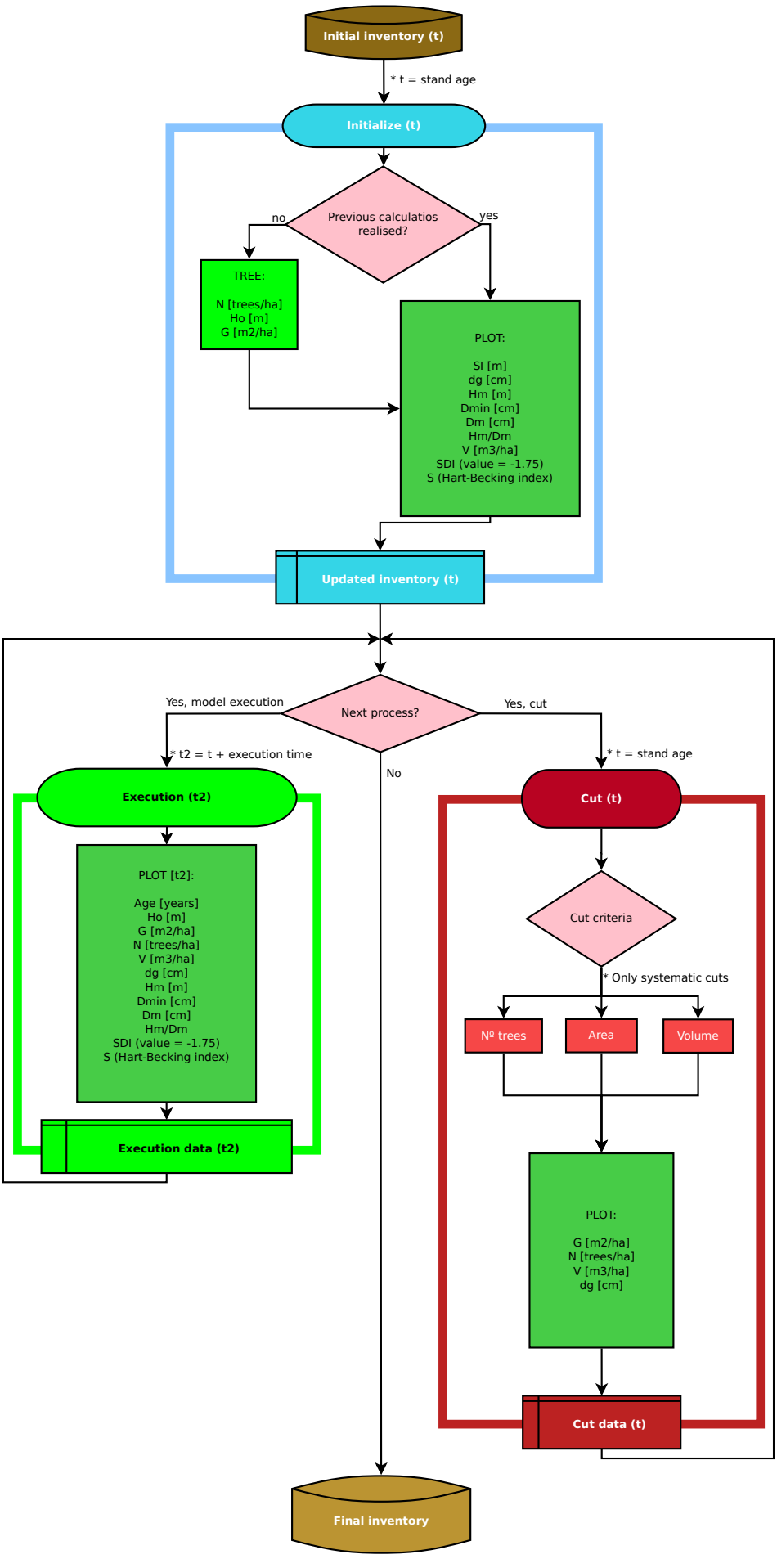
Figure 3: Provenance regions of *Pinus sylvestris* in Spain, by MAPA

- Execution recommended time: 10/15 years executions (survival and growth equations developed by using that criteria)
- Site Index is defined as top height at a base age of 100 years

Bibliography

Model components:

- **Calculations by using tree data** (just in cases when that information is not available at the initial inventory):
  Density, Basal Area and Dominant Height
- **Site Index and Quality Index equations**:
  Rojo A, Montero G (1996). El pino silvestre en la Sierra de Guadarrama MAPA
- **Dominant Height Growth equation**:
  del Río M, Montero G (2001). Modelo de simulación de claras en masas de Pinus sylvestris L (No. 04; SD396. 5, R5.). INIA
- **Survival equation**:
  del Río M, Montero G (2001). Modelo de simulación de claras en masas de Pinus sylvestris L (No. 04; SD396. 5, R5.). INIA
- **Basal Area Growth equation**:
  del Río M, Montero G (2001). Modelo de simulación de claras en masas de Pinus sylvestris L (No. 04; SD396. 5, R5.). INIA
- **Volume and Volume Growth equation**:
  del Río M, Montero G (2001). Modelo de simulación de claras en masas de Pinus sylvestris L (No. 04; SD396. 5, R5.). INIA
- **Mean Height, Mean Diameter and Minimum Diameter equations**:
  del Río M, Montero G (2001). Modelo de simulación de claras en masas de Pinus sylvestris L (No. 04; SD396. 5, R5.). INIA
- **Value for Reineke Index equation**:
  del Río M, Montero G (2001). Modelo de simulación de claras en masas de Pinus sylvestris L (No. 04; SD396. 5, R5.). INIA
- **Quadratic Mean Diameter and Hart Index equation**:
  Standard equations
- **Harvest equations**:
  del Río M, Montero G (2001). Modelo de simulación de claras en masas de Pinus sylvestris L (No. 04; SD396. 5, R5.). INIA


Initial inventory (t)
* t = stand age
Initialize (t)
Previous calculatios realised?
no
yes
TREE:
N [trees/ha]
Ho [m]
G [m2/ha]
PLOT:
SI [m]
dg [cm]
Hm [m]
Dmin [cm]
Dm [cm]
Hm/Dm
V [m3/ha]
SDI (value = -1.75)
S (Hart-Becking index)
Updated inventory (t)
Next process?
Yes, model execution
Yes, cut
No
* t2 = t + execution time
* t = stand age
Execution (t2)
PLOT [t2]:
Age [years]
Ho [m]
G [m2/ha]
N [trees/ha]
V [m3/ha]
dg [cm]
Hm [m]
Dmin [cm]
Dm [cm]
Hm/Dm
SDI (value = -1.75)
S (Hart-Becking index)
Execution data (t2)
Cut (t)
Cut criteria
* Only systematic cuts
Nº trees
Area
Volume
PLOT:
G [m2/ha]
N [trees/ha]
V [m3/ha]
dg [cm]
Cut data (t)
Final inventory

Contacts

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Interest Links

SIMANFOR - Support system for simulating Sustainable Forest Management Alternatives. Accessed 11 May 2021, in `https://www.simanfor.es/`

iuFOR - Sustainable Forest Management Research Institute UVa-INIA. Accessed 11 May 2021, in `http://sostenible.palencia.uva.es/`

ETSIIAA Palencia - Higher Technical School of Agricultural Engineering of Palencia. Accessed 11 May 2021, in `http://etsiiaa.uva.es/`

UVa - University of Valladolid. Accessed 11 May 2021, in `https://www.uva.es`